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A new genus and species, *Tumidochelia randyi,* from the Gulf of Mexico (Crustacea: Peracarida: Tanaidacea)

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Abstract.—Tumidochelia randyi, new genus, new species is described from the continental slope of the northern Gulf of Mexico at depths ranging from 482 to 2974 m. It is distinguished from the other genera and species of Tanaidomorpha by having: an inflated "shield-like" laterally compressed expansion of the inner distal side of the cheliped carpus, and a biramous uropod with a dorsal process on the inner distal margin of the protopod. *Tumidochelia randyi* is placed in the family Colletteidae Larsen & Wilson, although no phylogenetic analysis has been performed to support this designation.

Deep-water tanaidaceans from the Gulf of Mexico have recently been the focus of an intense taxonomic study. Prior to the year 2000, only five species, two apseudomorphans, one neotanaidomorphan, and two tanaidomorphans were known from depths greater than 200 m (see Gardiner 1975, Sieg & Heard 1989, Viskup & Heard 1989, Meyer & Heard 1989). As a result of study conducted on the Tanaidacea of the Gulf of Mexico, within the last year, the number of described deep-water species from the region has nearly tripled (Larsen 2002, Larsen & Heard 2002, 2003; Larsen & Hansknecht 2002).

Recent examination of specimens collected from the deep waters of the northern Gulf of Mexico by personnel of Texas A&M University during a Mineral Management Service sponsored study revealed an undescribed tanaidomorphan tanaidacean having affinities with species of the family Colletteidae Larsen & Wilson, 2002. After further study it was determined that the species was undescribed and represented a new genus. This new genus and species, which is described here, brings the number of tanaidacean taxa described from the deep water (greater than 300 m) in the Gulf of Mexico to 14 species in 11 different genera.

Type material has been deposited in the National Museum of Natural History, Washington, D.C. (USNM), and the Gulf Coast Research Laboratory Museum (GCRL). The terminology used in this study follows that of Dojiri & Sieg (1997) with the exception of the terms sternal and tergal, which have been substituted by ventral and dorsal, respectively.

Tumidochelia, new genus

Diagnosis.—Female: Body elongate. Antennule with 4 articles. Antenna with 6 articles; article 3 without fusion line. Mandible molars of intermediate width between those of *Typhlotanais* and *Leptognathia,* and with ring of small apical spines. Cheliped with inflated "shield-like" laterally compressed expansion of the inner distal side of the carpus. Pereopod 1–3, propodus longer than dactylus and unguis combined. Pereopod 4–6, propodus longer, or as long

as dactylus and unguis combined. Marsupium consists of four oostegites. Pleopods present. Uropod biramous, bearing distal process on protopod inner margin; endopod and exopod each with 2 articles. Male unknown.

Remarks.—The short dactylus on pereopods 1–3 and long dactylus on pereopods 4–6 is a condition found in *Tanaella* Norman & Stebbing, 1886, but members of this genus have uniramous uropods and different cheliped structure. The special features of the uropod are similar to these of *Leptognathiella spinicauda* Bird & Holdich, 1984, but this species lacks an inflated carpal lobe on the cheliped. The distinctive uropod and the inflated cheliped carpus are not found in other members of *Leptognathiella* Hansen, 1913. A specialized cheliped similar to that of *Tumidochelia* has been reported for *Stenotanais hamicauda* Bird & Holdich, 1984, *S. crassiseta* Bird & Holdich, 1984, *Paraleptognathia bacescui* Kudinova-Pasternak, 1981, *Akanthophoreus inermis* Sieg, 1986, and to a lesser degree, *Akanthophoreus weddellensis* Sieg, 1986; however, in these species, the uropod is distinctively different from that of *Tumidochelia.* The amount of homoplasy indicated by these conflicting characters is characteristic of the Paratanaidoidea (see Larsen & Wilson, 2002). With the exception of the biarticulated uropodal exopod, *Tumidochelia* fits the diagnosis for Colletteidae, but does not come close to any other family diagnoses within the Tanaidomorpha. *Tumidochelia* is therefore placed within the Colletteidae, although no phylogenetic analyses have been performed to formally support this designation.

Etymology.—Genus named for the inflated cheliped (Latin: inflated + cheliped = tumidus + chelia).

Type species.—*Tumidochelia randyi.*

Tumidochelia randyi, new species
Figs. 1 & 2

Material.—Holotype: 1 non-ovigerous female, USNM 1012109, Station NB3-2, 5 May 2000, 26°33.3912′N, 91°49.4653′W, 1875 m. Paratypes: 1 non-ovigerous female, USNM 1012111, Station C12-2, 2 Jun 2000, 26°22.9752′N, 89°14.4854′W, 2920 m; 1 non-ovigerous female, USNM 1012112, Station AC1-2, 19 May 2000, 26°23.2813′N, 94°33.2633′W, 2450 m; 2 non-ovigerous females, GCRL 2049, Station B3-1, 10 May 2000, 26°09.8667′N, 91°44.1060′W, 2650 m.

Additional material.—1 non-ovigerous female, Station C7-1, 30 May 2000, 27°43.6967′N, 89°58.7782′W, 1080 m; 1 ovigerous female, Station C12-1, 2 Jun 2000, 26°22.7651′N, 89°14.4849′W, 2922 m; 1 non-ovigerous female, Station MT1-2, 17 Jun 2000, 28°32.3703′N, 89°49.7338′W, 482 m; 2 non-ovigerous females, Station NB5-2, 9 May 2000, 26°15.0855′N, 91°12.7524′W, 2060 m; 1 non-ovigerous female, Station S35-2, 11 Jun 2000, 29°19.9897′N, 87°02.9021′W, 667 m; 2 non-ovigerous females, Station S37-1, 13 Jun 2000, 28°33.4054′N, 87°45.7357′W, 2388 m; 1 non-ovigerous female, Station S37-2, 13 Jun 2000, 28°33.4292′N, 87°45.6441′W, 2,382 m; 1 non-ovigerous female, Station S41-1, 8 Jun 2000, 28°00.8463′N, 86°34.5587′W, 2974 m.

Description.—Body sub-cylindrical, elongate, approximately 7.7 times longer than wide. (Figs. 1A, B)

Cephalothorax (Figs. 1A, B): Longer than wide (l/w 1.33) with no pronounced spines or setae.

Pereonites (Figs. 1A, B): All approximately of equal length and width.

Pleon (Figs. 1A, B): Having pleonites all approximately of equal length and width.

Pleotelson (Figs. 1A, B, H): Longer than combined length of 3 pleonites and tapering to a pointed apex.

Antenna 1 (Fig. 1C): With 4 articles. Stout at base tapering distally, approximately 0.65 length of carapace. Article 1 with 1 simple distal seta and 2 subdistal broom setae; article 2 approximately 0.75 length of article 1, with 2 simple distal setae; article 3 approximately 0.3 length of article 2, with

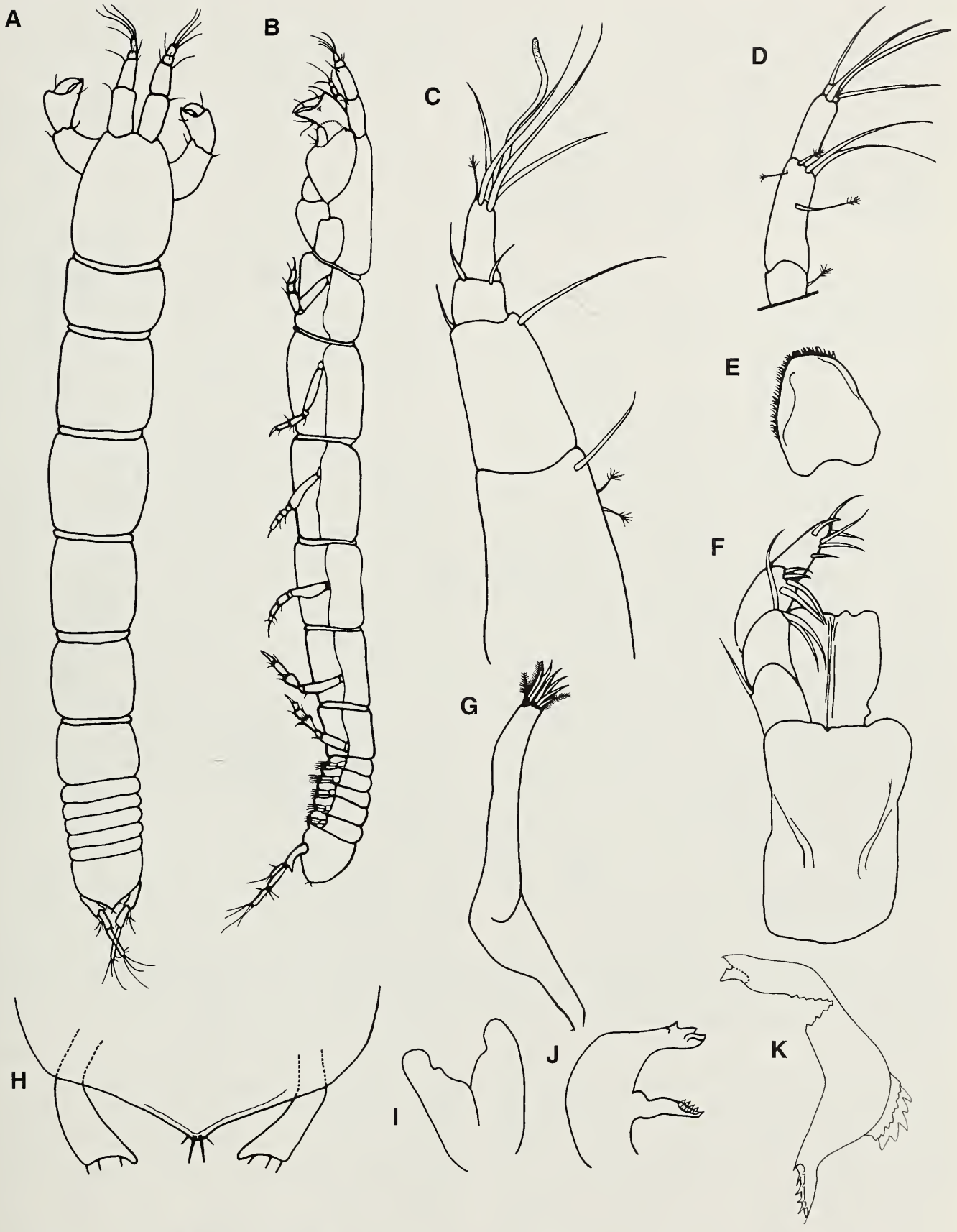

Fig. 1. *Tumidochelia randyi* new genus, new species, non-ovigerous female. A. Dorsal view. B. Lateral view. C. Antenna 1. D. Antenna 2. E. Labrum. F. Maxilliped. G. Maxilla 1. H. Pleotelson. I. Labium. J. Right mandible. K. Left mandible.

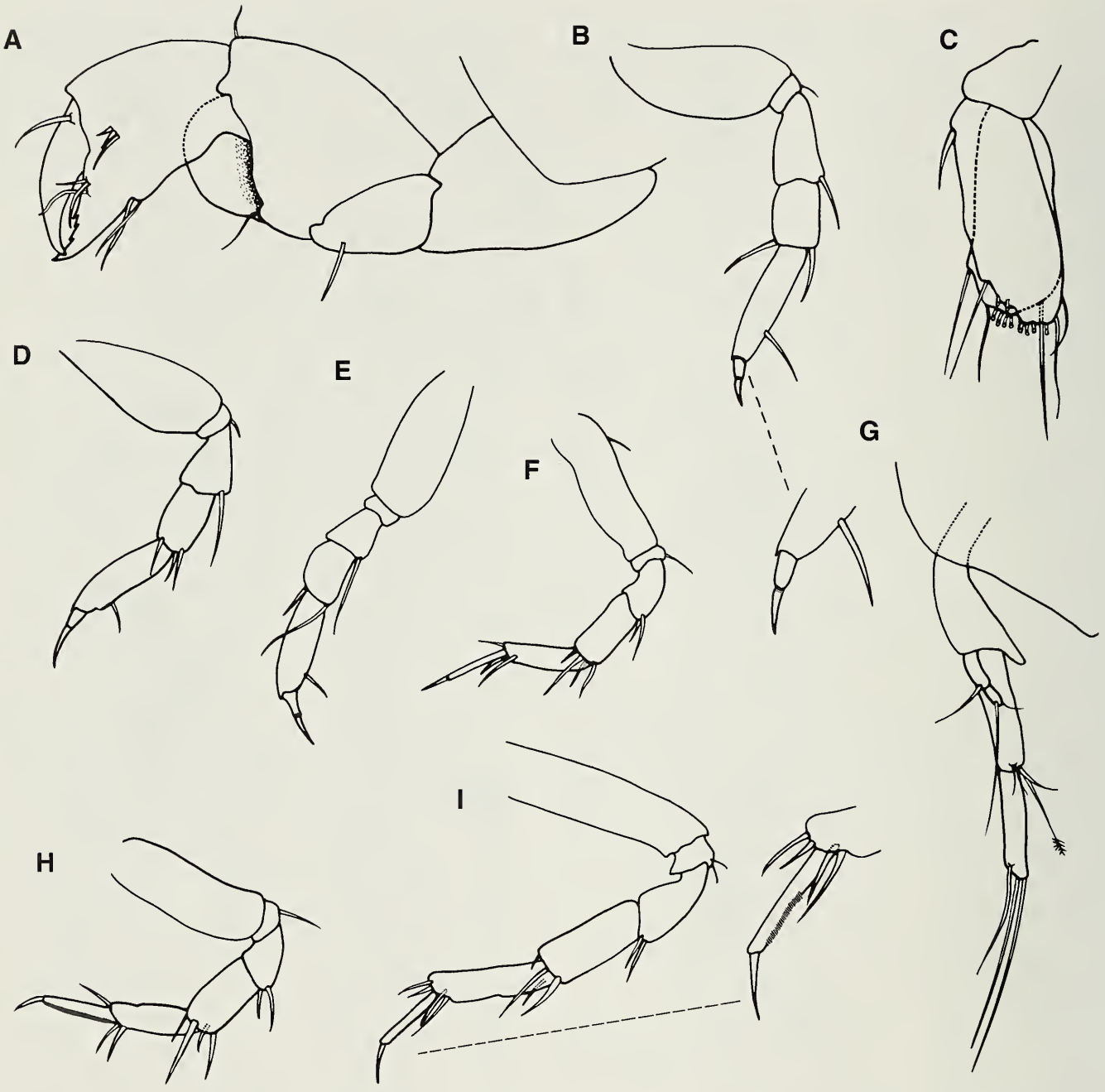

Fig. 2. *Tumidochelia randyi* new genus, new species, non-ovigerous female. A. Left cheliped. B. Pereopod 1 with enlargement of dactylus and unguis. C. Pleopod 1. D. Pereopod 2. E. Pereopod 3. F. Pereopod 4. G. Uropod. H. Pereopod 5. I. Pereopod 6 with enlargement of dactylus and unguis.

2 simple distal setae; article 4 narrowing distally, approximately twice length of article 3, with 4 simple distal setae, 1 distal broom seta, and 1 elongate aesthetasc.

Antenna 2 (Fig. 1D): With 6 articles (observed from undissected specimen). Approximately 0.5 length of antenna 1. Articles 1, 2 and proximal part of article 3 not recovered; distal part of article 3 with 1 broom seta; article 4 approximately same length as articles 5 and 6 combined, with 2 simple distal setae, 2 distal broom setae, and 1 subdistal broom seta; article 5 approximately 0.75 length of article 4, with 1 simple distal seta; article 6 approximately 0.25 length of article 5, with 3 simple distal setae.

Labrum (Fig. 1E): Apex rounded, with numerous setae.

Right Mandible (Fig. 1J): Molar process of intermediate width and tapering distally, with ring of terminal spines; incisor with 4 acute denticles.

Left Mandible (Fig. 1K): Molar as in

right mandible; incisor pointed; lacinia mobilis wider than incisor with flat apex.

Maxilla 1 (Fig. 1G): Endite with 8 terminal spiniform setae of which, 3 are setulose; palp not recovered.

Maxilla 2: not recovered.

Labium (Fig. 1I): Smooth with 2 blunt lobes.

Maxilliped (Fig. 1F): With smooth endites; basis fused; palp articles 1–4 similar in length; palp article 1 with simple outer seta; palp article 2 with 3 simple distal setae; palp article 3 with 4 simple distal setae; palp article 4 with 6 simple distal setae.

Epignath: Not recovered.

Cheliped, left (Fig. 2A): Attachment via sclerite. Basis smooth approximately same length as carpus; merus narrowing distally, with 1 subdistal ventral seta; carpus widening distally, with 1 simple dorsodistal seta, 1 simple ventrodistal seta, distal side inflated, extending distally past articulation; propodus approximately same length as basis with 2 simple ventral setae mid-length, and 3 small distal setae proximal to fixed finger; fixed finger displaying distal notches extending only to mid-length, with 3 medial setae; dactylus large, with 1 dorsoproximal seta.

Pereopod 1 (Fig. 2B): Basis robust with no seta; ischium with 1 simple distal seta; merus widening distally, with 1 simple ventral distal seta; carpus rectangular approximately 0.8 length of merus, with 1 simple dorsal distal seta and 1 simple ventral distal seta; propodus elongate approximately 2 times length of carpus, with 1 simple ventral subdistal seta; dactylus and unguis approximately 0.4 length of propodus, with fine distal notches.

Pereopod 2 (Fig. 2D): Same as pereopod 1, except carpus bearing 1 simple dorsodorsal distal seta and 2 simple ventrodistal setae.

Pereopod 3 (Fig. 2E): Same as pereopod 1, except ischium smooth; merus approximately 0.5 length of merus of pereopod 1; carpus with longer simple ventrodistal seta.

Pereopod 4 (Fig. 2F): Basis elongate with 1 simple ventroproximal seta; ischium with 1 simple ventral seta; merus widening distally, with 2 simple ventrodistal setae; carpus rectangular, slightly longer than merus, with 4 simple distal setae; propodus approximately same length as carpus, with 3 simple distal setae; dactylus (including unguis) approximately same length as propodus.

Pereopod 5 (Fig. 2H): Same as pereopod 4, except basis without seta; dactylus with notches extending the full length of posterior margin.

Pereopod 6 (Fig. 2I): Same as pereopod 4, except basis approximately 0.2 times longer than basis of pereopod 4, without seta; ischium with 2 simple distal setae; merus approximately 0.3 times longer than merus of pereopod 4; carpus approximately two times longer than carpus of pereopod 4; propodus approximately 0.3 times longer than propodus of peroeopod 4, with 4 simple distal setae; dactylus approximately 0.2 times longer than dactylus of pereopod 4, with notches extending 0.75 of length.

Pleopods (Fig. 2C): Protopod smooth; endopod rectangular, with numerous simple distal setae; exopod rectangular, with 1 robust proximal seta, and numerous simple distal setae.

Uropods (Fig. 2G): Biramous, attached to ventrolateral margin in mid-region of pleotelson. Protopod smooth, with dorsomedially directed process on inner distal margin; endopod with 2 articles of approximately equal length; article 1 with 3 simple distal setae and 1 distal broom seta; article 2 with 3 simple distal setae; exopod approximately 0.25 length of endopod, with 2 articles; article 1 approximately twice length of article 2, with 1 simple distal seta; article 2 with 2 simple distal setae.

Remarks.—See remarks for genus.

Etymology.—The species named for Thomas Randell "Randy" Knight, father of the senior author, in appreciation of his support and encouragement of her academic pursuits.

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Literature Cited

Bird, G. J., & D. M. Holdich. 1984. New deep-sea Leptognathiid Tanaids (Crustacea, Tanaidacea) from the North-east Atlantic.—Zoologica Scripta 13:285–315.

Dojiri, M., & J. Sieg. 1997. Chapter 3. The Tanaidacea. Pp. 181–268 *in* J. A. Blake & P. H. Scott, eds., Taxonomic Atlas of the Benthic Fauna of the Santa Maria Basin and Western Santa Barbara Channel, vol. 11. The Crustacea Part 2. The Isopoda, Cumacea and Tanaidacea. Santa Barbara Museum of Natural History, Santa Barbara, California, 278 pp.

Gardiner, L. F. 1975. The systematics, postmarsupial development, and ecology of the deep-sea family Neotanaidae (Crustacea: Tanaidacea).—Smithsonian Contributions to Zoology 170:1–265.

Hansen, H. J. 1913. Crustacea, Malacostraca. II. Danish Ingolf Expedition 3:1–127.

Kudinova-Pasternak, R. K. 1981. Tanaidacea. Pp. 94–112 *in* A. P. Kusnjezov & A. N. Mironov, eds., Benthos of the submarine mountain Markus Necker and adjacent Pacific regions. Shirshov Institute of Oceanography, Moscow.

Larsen, K. 2002. Tanaidacea (Crustacea: Peracarida) of the Gulf of Mexico, X: the question of being male.—Gulf and Caribbean Research 14:53–66.

———, & T. Hansknecht. 2002. New species of the genus *Neotanais*.—Journal of Natural History (in press).

———, & R. W. Heard. 2002. Two new deep-sea tanaidacean genera, *Isopodidus* and *Cetiopyge* (Crustacea: Peracarida) from the Gulf of Mexico.—Proceedings of the Biological Society of Washington 115:403–411.

———, & ———. 2003. Revision of the deep-sea genus *Tanaella* (Crustacea: Tanaidacea).—Journal of Natural History (in press).

———, & G. D. F. Wilson. 2002. Tanaidacean phylogeny. The first step: the superfamily Paratanaidoidea.—Journal of Zoological Systematics and Evolutionary Research 40:205–222.

Meyer, G. H., & R. W. Heard. 1989. Tanaidacea (Crustacea: Peracarida) of the Gulf of Mexico. VII. *Atlantapseudes lindae,* n. sp. (Apseudidae) from the continental slope of the northern Gulf of Mexico.—Gulf Research Reports 8:67–105.

Norman, A. M., & T. R. R. Stebbing. 1886. On the Crustacea Isopoda of the Lightning, Porcupine, and Valorous Expeditions.—Transactions of the Zoological Society of London 12:77–141.

Sieg, J. 1986. Tanaidacea (Crustacea) von der Antarktis und Subantarktis. II. Tanaidacea gesammelt von Dr. J. W. Wägele während der Deutschen Antarktis Expedition 1983.—Mitteilungen aus dem Zoologischen Museum der Universität Kiel 2:1–80.

———, & R. W. Heard. 1989. Tanaidacea (Crustacea: Peracarida) of the Gulf of Mexico. VI. On the genus *Mesotanais* Dollfus, 1897 with descriptions of two new species, *M. longisetosus* and *M. vadicola*.—Gulf Research Report 8:73–95.

Viskup, B. A., & R. W. Heard. 1989. Tanaidacea (Crustacea: Peracarida) of the Gulf of Mexico. VIII. *Pseudosphyrapus siegi,* n.sp. (Sphyrapidae) from the continental slope of the northern Gulf of Mexico.—Gulf Research Reports 8: 107–115.